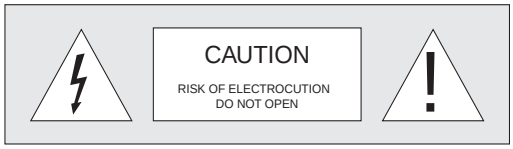
RTX 45-55

USE AND INSTALLATION
MANUAL

ENGLISH

IMPORTANT SAFETY INSTRUCTIONS



This symbol indicates the danger of possible electric shock caused by uninsulated current inside the product.

This symbol indicates the presence of important instructions regarding use and maintenance of the product.

The RTX system consists of two parts, the DigiOptical Image Processor and the Display, connected by an optical fibre cable. Below, the unit will be referred to as including the two parts making up the system.

- **Read and keep this manual.**
  This manual contains important information on how to install and use this device in an appropriate manner. Before use, carefully read the safety rules and instructions. Keep the manual for all future reference.

- **Avoid contact with the internal parts of the units.**
  Inside the units there are electrical parts fed with dangerous voltage and parts that operate at high temperatures. Do not open the units; contact authorised personnel for all maintenance and repair operations.
  Opening the units will also invalidate the warranty.

- **Device for disconnecting the power supply.**
  The device for disconnecting the units from the electrical grid is the feed cable plug. During installation make sure that the feed cable plugs and the electrical system sockets are easily accessible. To disconnect the units from the electric sockets, pull the plug and not the cable.

- **Only use the type of feed indicated.**
  Connect the units to an electrical grid with nominal voltage between the values of 100-240 VAC, 50/60 Hz and provided with grounding. If you are not sure of the type of power in your home, consult a qualified technician.
  Make sure not to overload the socket or any extension cord. For the DigiOptical Image Processor only use the power supply provided or in any case a power supply approved by SIM2.

- **Pay attention to the cables.**
  Arrange the cables so that they do not constitute an obstacle. Also, keep them out of the reach of children.
  Install the units as close as possible to the wall socket. Do not tread on the power cables, make sure that they are not tangled or jerked; do not expose them to heat sources; make sure they do not form knots or bends. If the cables are damaged in any way, stop using the system and call an authorised technician.

- **Disconnect the device in the event of storms or when not used.**
  To avoid damage that could be caused by lightning striking in the vicinity of your home, disconnect the units in the event of storms or when the system is not going to be used for a long period.

- **Avoid contact with liquids and exposure to humidity.**
  Do not use the units near water (sinks, tubs, etc.); do not place objects containing liquids on top of or near the units and do not expose then to rain, humidity, drops or sprays; do not use water or liquid detergents to clean them.
- **Avoid overheating the units.**
  Do not block ventilation openings. Do not place the units near heat sources such as stoves, radiators or other devices (including amplifiers) that generate heat. Do not place the units in a confined space (bookcase, shelves, etc.) that is not well ventilated.

- **Do not expose eyes to the intense light of the lamp.**
  Never look directly into the lamp through the ventilation opening when it is working.
  This could damage your eyesight. In this respect, pay particular attention to children.

- **Position the unit on a stable surface.**
  To avoid serious injury and damage to things, make sure the units are placed on a level, flat and stable surface from which they cannot fall, tip over or slide. In this respect, pay particular attention when they are placed on a trolley to be moved. Do not to expose them to shocks.

- **Do not put anything in the openings of the units.**
  Make sure that no object is placed inside the units. If this happens, immediately disconnect the unit from the power supply and call an authorised technician.

- **Federal Communication Commission (FCC Statement)**
  This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules.
  These limits are designed to provide reasonable protection against harmful interference when the equipment is used in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determinated by turning the equipment off and on, the user is encuraged to try to correct the interference by one or more of the following measures:
  - Reorient or relocate the receiving antenna
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.

- **For customers in Canada**
  This Class B digital apparatus complies with Canadian ICES-003.

- **For customers in the United Kingdom**
  ATTENTION: This apparatus must be earthed.
  The wires in this mains lead are coloured in accordance with the following code:
  Green-and-Yellow: Earth
  Blue: Neutral
  Brown: Live
  As the colours of the wires in the mains lead of this apparatus may not correspond with the coloured markings identifying the terminals in your plug proceed as follows:
  The wire which is coloured green-and-yellow must be connected to the terminal in the plug which is marked by the letter E or by the safety earth symbol or coloured green or green-and-yellow.
  The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black.
  The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red.

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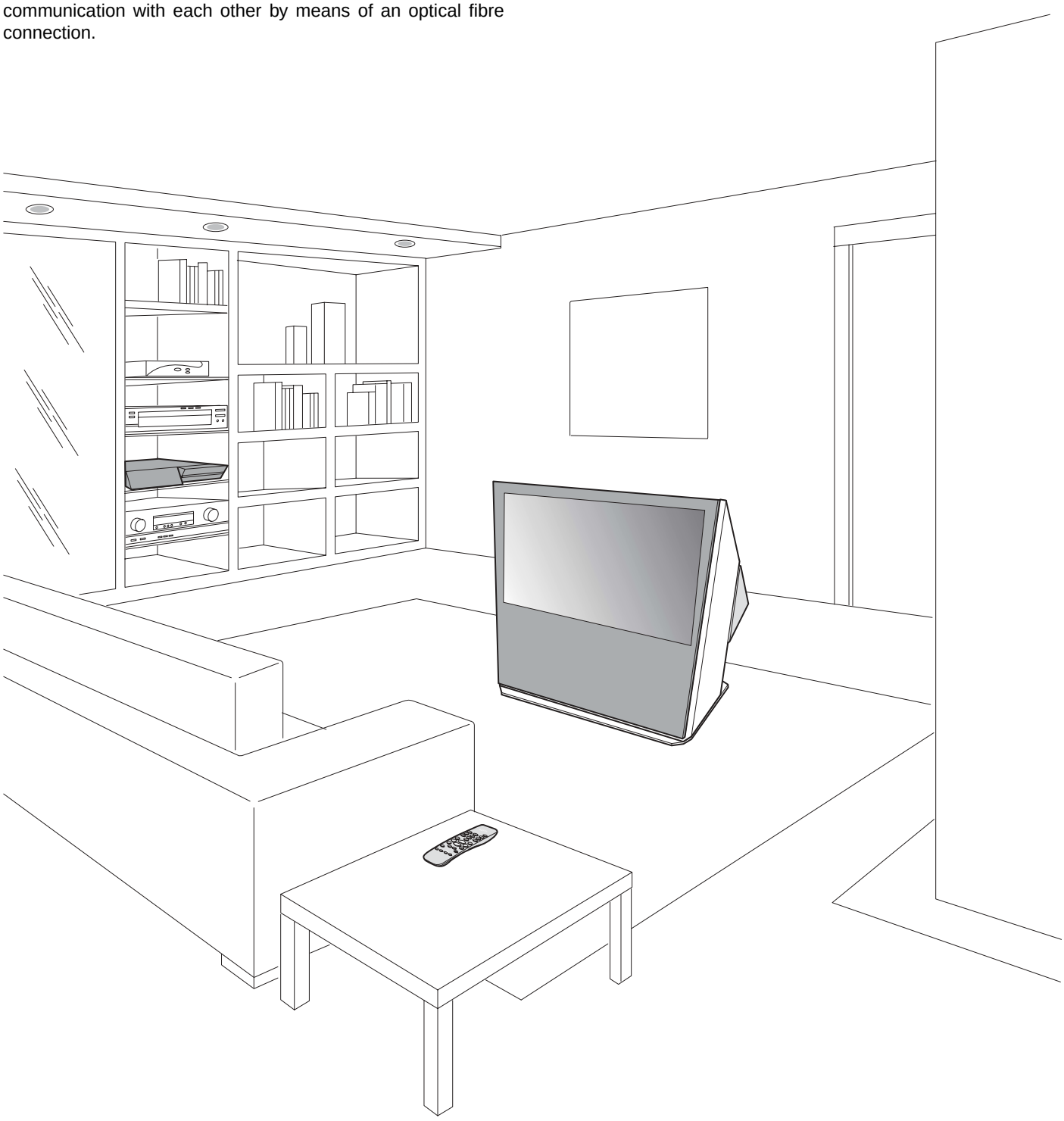
INTRODUCTION

Thank you for choosing the GrandCinema RTX system from SIM2!

The RTX system integrates the signal processing ability of the DigiOptical Image Processor with the faithful reproduction of a DLP™ technology Display, putting the two units in communication with each other by means of an optical fibre connection.



The DigiOptical Image Processor, ideally placed near the sources, can acquire and process a wide range of video signals, in order to send them to the Display by means of the optical fibre connection.

Its complement of inputs (2 Composite Video inputs, 2 S-Video inputs, up to 4 Component or RGB inputs, 2 graphic RGB inputs and 1 DVI-D input) allows connection to a wide variety sources, both analogue and digital: DVD players, VCRs, satellite and cable receiver boxes, computers, videogame consoles, video cameras, etc.

The signal processing it performs allows excellent reproduction of a wide range of input signals, from interlaced video to high definition and graphics.

The conversion of interlaced video signals to progressive signals, done through use of the renowned DCDi™ technology, produces fluid, natural images free of flicker and steps along the diagonal lines.

The faithful reproduction of signals at higher resolutions (such as high definition video and graphics) occurs without loss of information or reduction of image sharpness thanks to its high ability to acquire signals at high pixel rates.

Adaptation of the input signal resolution to that of the Display occurs without altering image quality through a wide range of aspect ratios, including several definable by the user.

All adjustments relevant to the image can be performed with the remote control with the aid of the On Screen Display; alternatively, the unit can be controlled by a domestic automation system through the serial port.

The Display, with its elegant and original design, produces an image using the very latest Texas Instruments DLP™ technology (1280x720 pixel DMD™ panel with 12° technology), a proprietary, dust-sealed optical system, a new six-segment colour wheel and a new concept Fresnel lens. All to provide an image without half-measures, with definition, sharpness, colorimetry and contrast equal to the renowned front projectors of SIM2's GrandCinema product line.

The connection between the two units occurs through a cable containing three optical fibres which allow transmission of the digital signal from the DigiOptical Image Processor to the Display and control signals in both directions.

Transmission occurs without interference or attenuation over distances of up to 500 m (1,640 ft).
Moreover, the flexibility and reduced diameter of the cable allow maximum freedom in installing the system in your home.

DLP and DMD are registered trademarks of Texas Instruments.
DCDi is a registered trademark of Faroudja, a division of Genesis Microchip, Inc.

1 INSTALLATION

CONNECTING THE TWO UNITS

The RTX system of SIM2 comprises the elements listed below (Fig.1):

- the Display
- the DigiOptical Image Processor
- the remote control
- the DigiOptical Image Processor power supply
- three power cables for the Display
- three power cables for the DigiOptical Image Processor
- the cable with three optical fibres for the connection between the DigiOptical Image Processor and the Display
- 4 1.5 V AAA-type batteries for the remote control
- the use and installation manual

If some of the accessories are missing, contact your dealer as soon as possible.

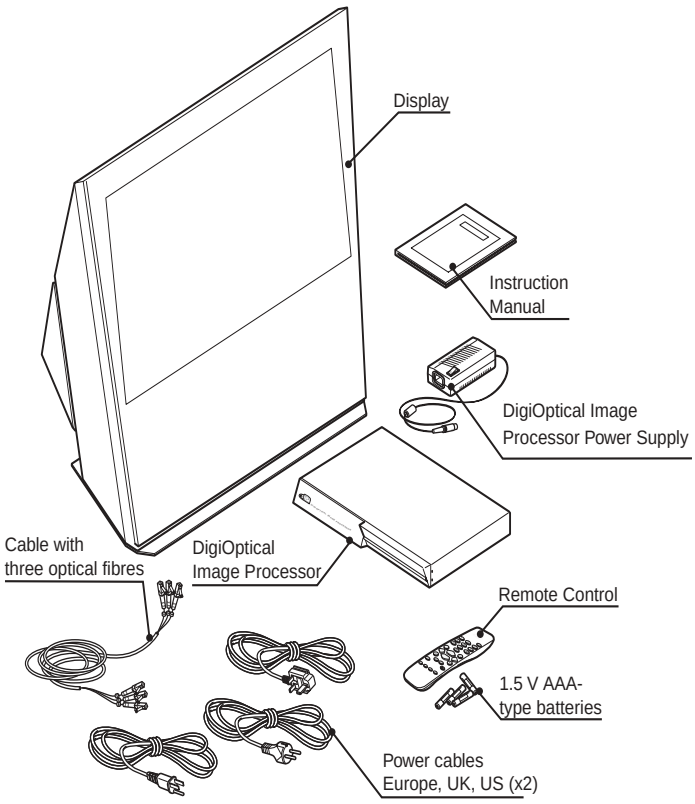


Fig. 1

The RTX system consists of two distinct units (the DigiOptical Image Processor and the Display), each of which equipped with a power cable and connected to each other by a 20 m (65.6 ft) optical fibre cable.

The ideal place for the DigiOptical Image Processor is the shelf of a cabinet or on a rack (its dimensions are compatible with a 19" rack). Make sure that the support surface is stable and that the unit has sufficient space around it for adequate ventilation (at least 3 cm [1.2 in]).
The unit is powered by an external power supply that provides a voltage of +7 VDC; the unit's power switch is on the power supply.
Connect the cable of the power supply to the POWER input located on the rear panel (Fig. 4).
Only use the power supply provided with the system or a power supply approved by SIM2.

The Display is designed to stand on the floor. Place it on a level, flat surface so that it has sufficient space for ventilation and, to avoid reflections, do not expose it to direct sunlight or intense light sources.
The connection to the electrical grid is located on the rear panel, like the power switch.
Adjust the rear feet to obtain the optimum viewing angle, according to the distance and height you sit in front of the Display (Fig. 2).

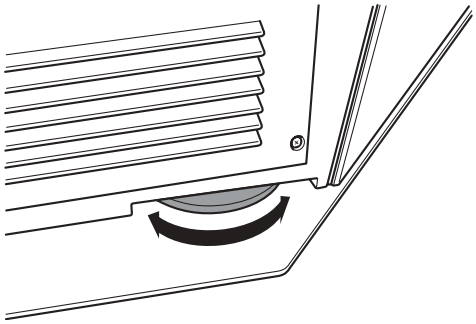


Fig. 2

The remote control provided (IR, operating with infrared rays), allows complete control of the system. It is only for the DigiOptical Image Processor and the Display and can be used by pointing at either of the two units without distinction, since each is equipped with an IR receiver on its front.

The connection between the two units is made with a cable containing three optical fibres, each terminating in an LC connector. The standard cable length (20 m, 65.6 ft), is sufficient

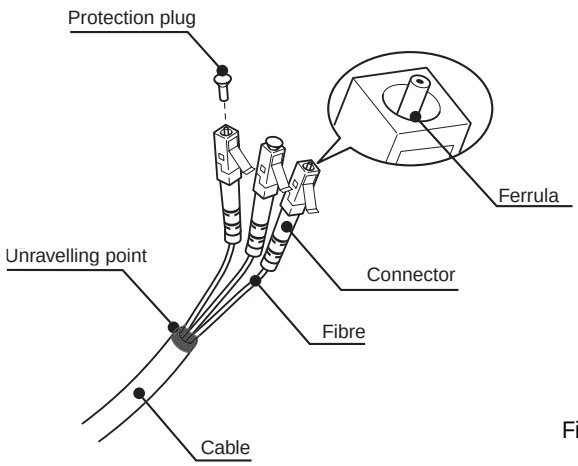


Fig. 3

for even the most demanding installations.
During installation of the optical fibre cable:

- Take particular care in handling the fibres: only handle the cable ahead of the unravelling point (Fig. 3). Only pull on the cable, not on the fibres or connectors.
- Only remove the protection plug covering the ferrula when inserting in the connector: if it should come in contact with other bodies it could be damaged and rendered unusable.
- Take particular care inserting the fibres in their respective connectors, which are located on the rear panel of the DigiOptical Image Processor and the back of the Display (Fig. 5).
- Make sure that the fibres are not switched: make sure the numbers shown on the fibres match those on the connectors.
- Check that the connectors are correctly inserted.
- Use the special cable clamps located on the rear panel of the Display to prevent the connectors from being subjected to pulling or levering.
- Make sure that the cable is not an obstacle for persons along its path.
- Take care not to create knots in the cable and that it does not form an arc with radius of less than 2 cm (0.8 in) when curved.
- Keep the cable from being pulled or jerked, as this could pull out the connectors and damage them.

CONNECTING THE VIDEO SOURCES

Connect the cables coming from the video sources, the serial cable coming from the external device and the fibres for connection to the Display, to the rear panel of the DigiOptical Image Processor.

To obtain the best performance from the RTX system, connect the various signal sources using good quality cables designed for video applications (impedance characteristic 75 Ω).
Make sure:

- to arrange the cables so that they are not a hindrance to people moving around;
- to carefully insert the cables in the connectors so as not to damage the feet;
- not to twist or crush the cables;
- not to tear the cables when disconnecting them from the various devices.

Video sources (television receivers, VCRs, DVD players, etc.) often have several outputs. To obtain the best performance from your system, carefully choose which output to use. Generally, the type of signal offering the best image quality is DVI-D, followed by RGB, Components, S-Video and Composite Video, in that order.
However, the RTX system is equipped with an excellent Video Decoder and De-Interlacer and therefore even inferior quality signals will produce extremely satisfactory results.

Table 2 shows the types of signals usually available for the most common types of video sources and the connectors to use on the DigiOptical Image Processor for their respective inputs.

VIDEO

Apply a Composite Video signal (CVBS) to these inputs through a cable with an RCA-type connector.
The connector on the source is generally yellow and the respective label often has the word VIDEO.
Although other types of signals are preferable (since they allow better image quality), it is still the most used type of output and nearly all television receivers, VCRs, DVD players, video cameras, etc., are equipped with it.

S-VIDEO

Apply an S-Video signal to these inputs through a cable with a mini-DIN type connector.
The corresponding output on the source can be identified by the wording S-VIDEO or Y/C.
Almost as widespread as Composite Video, it is preferable since it offers a clearer and sharper image.

COMPONENT/RGBS 5 6 7 8

These inputs appear as three sets of 5 RCA connectors (5,6,7) and a set of 5 BNC connectors (8).
RGB and Component signals can be applied to each set of connectors.
RGB signals can have composite synchronism on the green signal (RGsB), composite synchronism on the HV signal or separate synchronisms on the H and V signals.
Connect the R, G, B outputs of the source to the respective R, G, B inputs of the DigiOptical Image Processor (paying attention not to switch them) and any synchronism signals to the HV or H and V inputs. Regarding the three sets of RCA connectors, the colours will help you perform the operation: the R connector is red, G is green, B is blue, H/HV is white and V is black.
By using a suitable cable for adapting from SCART to RCA (or BNC) type connectors, an RGB video signal coming from a source equipped with an SCART plug output can be applied to this input.
Component signals are connected to inputs Y, Cr and Cb, paying attention to maintain the correspondence with the outputs on the source.
Since the latter can be labelled in various ways, refer to Table 1 to establish the correspondences between the various signals. The connector colours can also be of help, as shown in the table.

Table 1

DigiOptical Image Processor Connector	Video signal source connector		
Y (green)	Y	Y	Y
Cr (red)	P_R	R-Y	V
Cb (blue)	P_B	B-Y	U

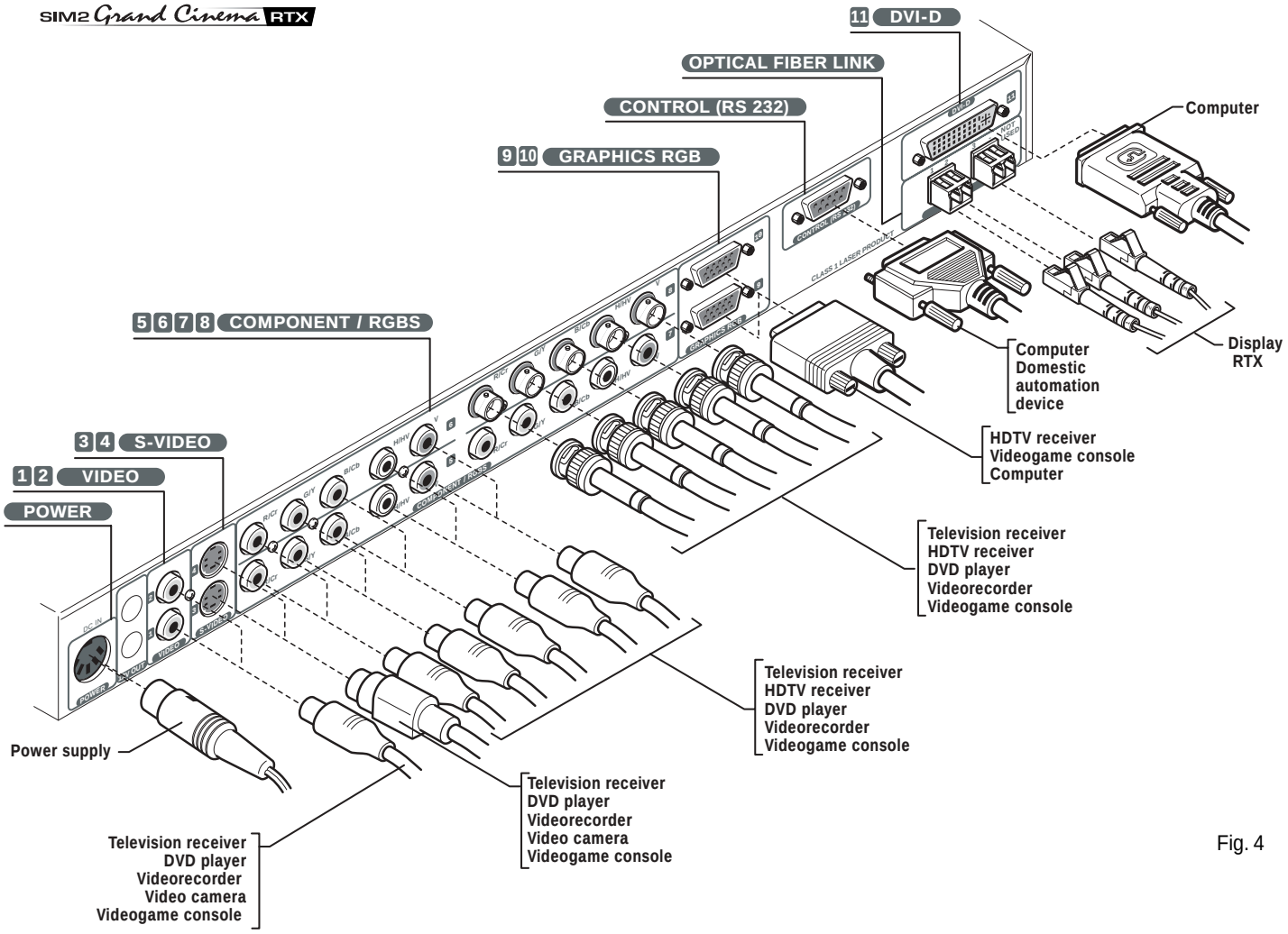

11 DVI-D
OPTICAL FIBER LINK
CONTROL (RS 232)
9 10 GRAPHICS RGB
5 6 7 8 COMPONENT / RGBS
3 4 S-VIDEO
1 2 VIDEO
POWER
Computer
Display RTX
Computer Domestic automation device
HDTV receiver Videogame console Computer
Television receiver HDTV receiver DVD player Videorecorder Videogame console
Television receiver HDTV receiver DVD player Videorecorder Videogame console
Television receiver DVD player Videorecorder Video camera Videogame console
Power supply
Television receiver DVD player Videorecorder Video camera Videogame console

Fig. 4

Table 2

Source	Signal	DigiOptical Image Processor	
		Connector	Input
Television receiver from Antenna, Satellite or Cable (Analogue or Digital)	Composite video S-Video Components RGB	Video S-Video Component/RGBS Component/RGBS	1 2 3 4 5 6 7 8 5 6 7 8
HDTV receiver	Components RGB	Component/RGBS Graphics RGB	5 6 7 8 9 10
DVD player	Composite video S-Video Components RGB	Video S-Video Component/RGBS Component/RGBS	1 2 3 4 5 6 7 8 5 6 7 8
Videorecorder	Composite video S-Video Components RGB	Video S-Video Component/RGBS Component/RGBS	1 2 3 4 5 6 7 8 5 6 7 8
Video camera	Composite video S-Video	Video S-Video	1 2 3 4
Videogame console	Composite video S-Video Components RGB RGB	Video S-Video Component/RGBS Component/RGBS Graphics RGB	1 2 3 4 5 6 7 8 5 6 7 8 9 10
Computer	RGB DVI	Graphics RGB DVI-D	9 10 11

The video signals applicable to this input can have scanning frequencies of 15 kHz (standard resolution video), 32 kHz or higher (progressive scanning video and high definition video).
Sometimes it is possible to choose whether to obtain a progressive instead of interlaced signal from the source. Although, in general a progressive signal provides better quality than an interlaced signal, it is often preferable not to perform the de-interlacing operation on the source but on the RTX system, which is equipped with sophisticated DCDi™ technology from Faroudja specifically for this purpose.
Even if as a rule progressive signals provide better quality than interlaced signals, for sources offering both outputs, it is advisable to compare the quality of the two images reproduced by the RTX system in the two cases: the de-interlacing performed by the RTX system (thanks to Faroudja's DCDi™ technology) is often more effective than that performed at the source (typically DVD players).

RGB GRAPHICS

Apply an RGB-type video or graphic signal to this input, using a cable with a DB15HD-type connector.
The device providing the signal (typically a personal computer or videogame console) must be able to provide separate H/V synchronisms or composite synchronisms on the green signal (RGsB).
The video or graphic signals applicable to this input can have horizontal scanning frequencies (H-sync) between 15 and 110 kHz and a vertical frequency (V-sync) between 40 and 100 Hz. Image resolution can vary between 640x480 and 1600x1200 pixels (VGA, SVGA, XGA, SXGA, UXGA).

DVI-D

If your source is equipped with it (more and more computers now have it) you can take advantage of the better image quality by using the DVI-D input.

CONTROL (RS232)

It is possible to control the system with a personal computer or domestic automation device through the serial port: all you need to do is connect a cable coming from an RS232 serial port. Ask SIM2 for the document containing the serial port settings and the list of main commands.

OPTICAL FIBRE LINK

After removing the protection plugs present on the fibre connectors and the panel connectors, carefully insert the fibres in their respective connectors, matching the numbers shown on each element. Be very carefully when handling the fibres and connectors.

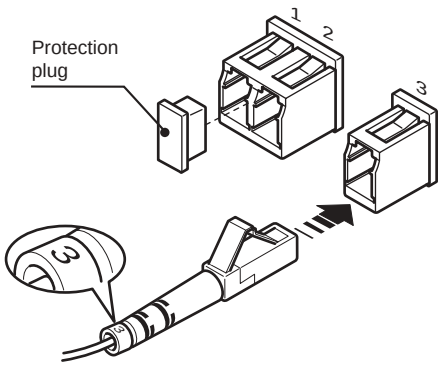


Fig. 5

2 USE

TURNING ON AND OFF

The RTX system consists of two units (DigiOptical Image Processor and Display), the first of which is also the system control centre. The DigiOptical Image Processor sends commands to the Display and receives information about its operation from it, in addition to the commands sent by the user. The system can be controlled from either the remote control (whose receivers are located on the DigiOptical Image Processor and on the Display) or the keypad located on the upper part of the Display.
However, the power supplies for the two units are separate: after connecting the units to the electrical grid, set their respective switches to the "I" position: the switch for the DigiOptical Image Processor is located on the external power supply (Fig. 6a), and

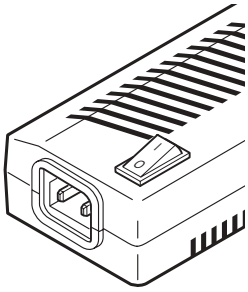


Fig. 6a

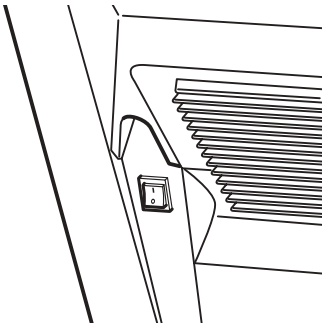


Fig. 6b

the one for the Display is on the rear panel (Fig. 6b).
After a few seconds (during which system initialisation takes place), the DigiOptical Image Processor and Display go on stand-by mode.
Information on the status of the system can be obtained by observing the two LEDs (green and blue) on the front panel of the DigiOptical Image Processor and the blue LED on the front of the Display in addition to the condition (off/lit) of the keypad. The significant conditions are shown in Table 3.

Table 3

Status	DigiOptical Image Processor		Display	
	Green LED	Blue LED	Front LED	Keyboard pad
Off	○	○	○	○
Initialisation	●	●	-	-
Stand-by	○	●	○	●
On	●	○	○	○
Cooling	☼	☼	-	-
Optical link not active	●	☼	●	●
Caution	☼	○	-	-
Error	○	☼	-	-

○ : Off ● : On ☼ : Flashing - : Insignificant

If the message is "Optical link not active" or "Error" the system cannot function; if "Attention" the system is working but there could be problems in displaying some of the input signals.

Turning on the system:
- from the remote control (keys 0-9)
- from the keypad of the Display (keys ↑ and ↓).

Typically, the image will appear after 15-20 seconds. Pressing a

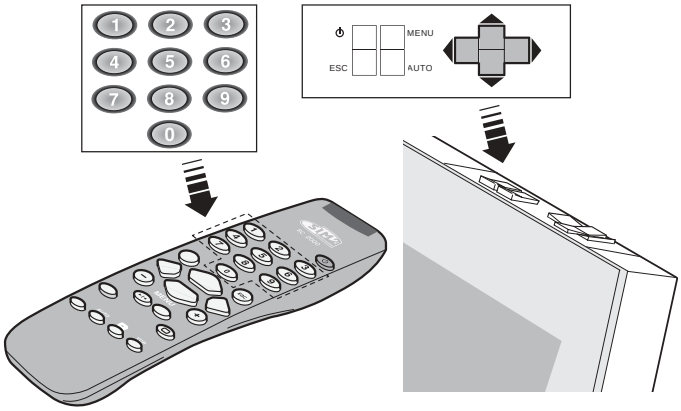


Fig. 7

key from 1-9 on the remote control selects the corresponding input; pressing the 0 key selects the input active when last turned off.
If too short a period of time has passed since it was last turned off, it is possible that the lamp will not light. In this case, it is advisable to wait at least one minute, which allows the lamp to cool.

Turning off the system:
- from the remote control (key ⏻)
- from the keypad of the Display (key ⏻).

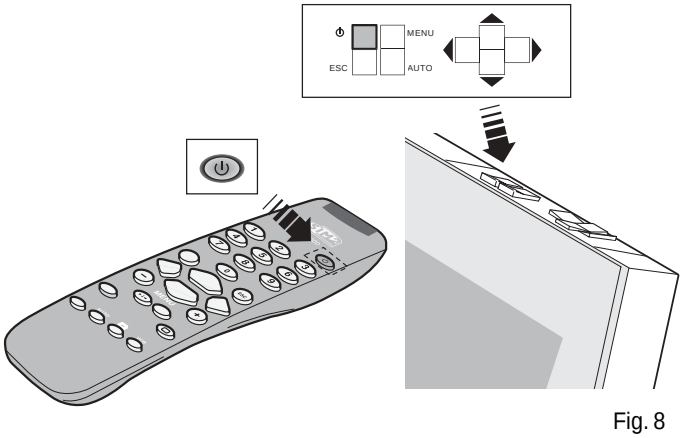


Fig. 8

Do not turn the power switches of the units to the “O” position and do not disconnect the power supply cables immediately after putting the system in stand-by mode, but wait at least one minute. This is to allow the fans in the Display unit to cool the lamp.

KEYPAD

The keypad on the back of the Display comprises eight keys that allow complete control of the device even in absence of the remote control.

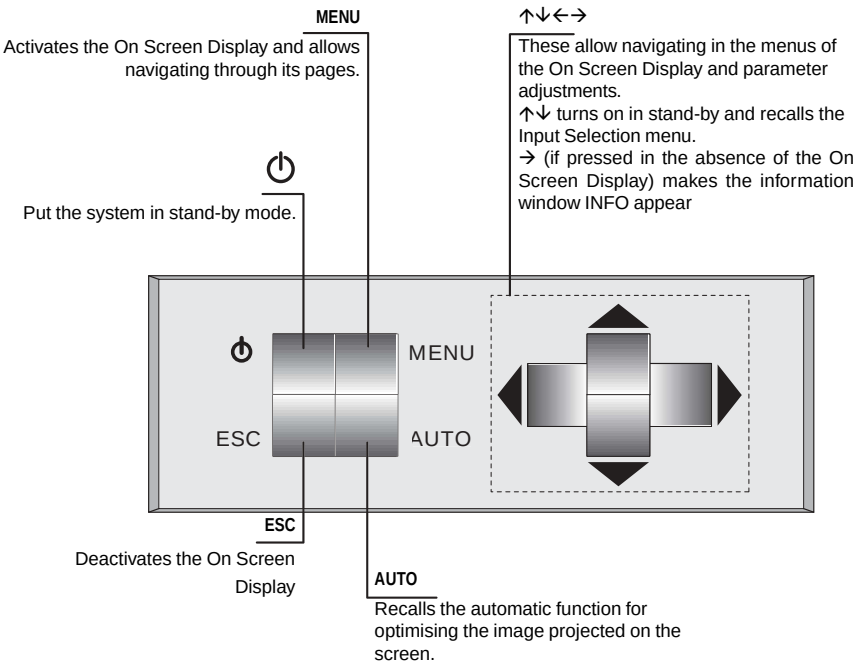

MENU
Activates the On Screen Display and allows navigating through its pages.
↑↓←→
These allow navigating in the menus of the On Screen Display and parameter adjustments.
↑↓ turns on in stand-by and recalls the Input Selection menu.
→ (if pressed in the absence of the On Screen Display) makes the information window INFO appear
Put the system in stand-by mode.
MENU
ESC
AUTO
ESC
Deactivates the On Screen Display
AUTO
Recalls the automatic function for optimising the image projected on the screen.

Fig. 9

REMOTE CONTROL

The remote control sends commands to the system by means of infrared rays.
There are two receivers, located on the front of the Display and on the front panel of the DigiOptical Image Processor.
Do not interpose obstacles between the remote control and the receivers: this could render the remote control ineffective.

The remote control operates with four 1.5 V AAA-type batteries. Insert the batteries carefully, respecting the polarity, as shown inside the battery compartment of the remote control itself (Fig. 10).
Replace the batteries when you notice the remote control losing its effectiveness.
Remove the batteries if the remote control is not being used for a long period, in order to avoid any chemical leaks that could damage it.

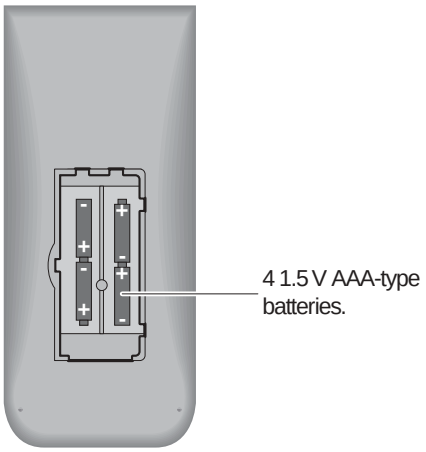


Fig. 10

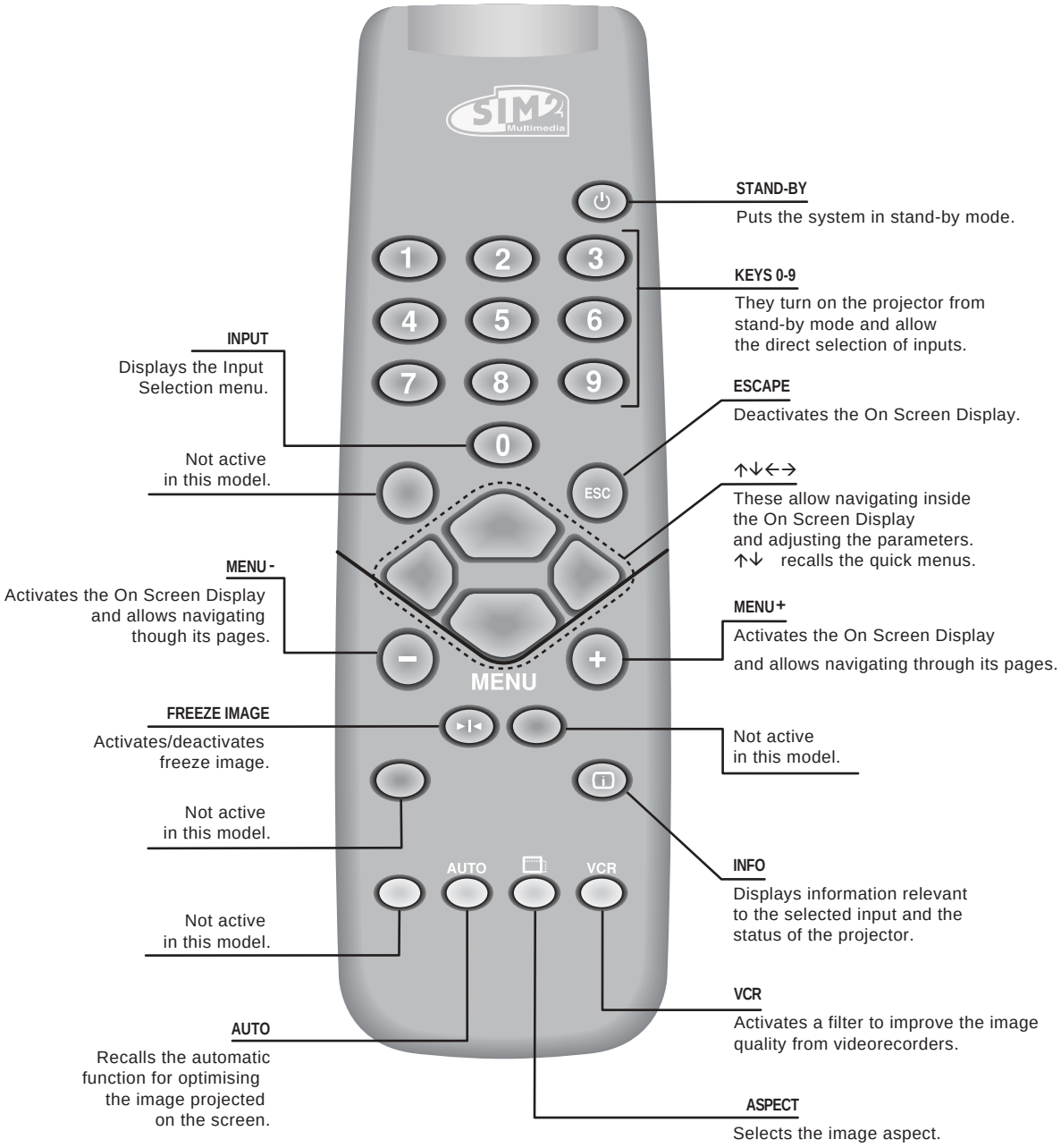

STAND-BY
Puts the system in stand-by mode.
KEYS 0-9
They turn on the projector from stand-by mode and allow the direct selection of inputs.
INPUT
Displays the Input Selection menu.
ESCAPE
Deactivates the On Screen Display.
Not active in this model.
↑↓←→
These allow navigating inside the On Screen Display and adjusting the parameters.
↑↓ recalls the quick menus.
MENU -
Activates the On Screen Display and allows navigating though its pages.
MENU +
Activates the On Screen Display and allows navigating through its pages.
MENU
FREEZE IMAGE
Activates/deactivates freeze image.
Not active in this model.
Not active in this model.
INFO
Displays information relevant to the selected input and the status of the projector.
AUTO
VCR
Not active in this model.
VCR
Activates a filter to improve the image quality from videorecorders.
AUTO
Recalls the automatic function for optimising the image projected on the screen.
ASPECT
Selects the image aspect.

Fig. 11

ON SCREEN MENU

All the system's functions can be activated from the keypad or remote control, with the aid of a practical and complete on screen menu system.

INPUTS

The input selection menu is recalled using the 0 key on the remote control and, when no other menu is displayed, even the keys ↑ and ↓ on the keypad. To select an input, scroll the list with the ↑ and ↓ keys until highlighting the desired input then press →.
Alternatively, press the corresponding numerical key (1..11) on the remote control (for numbers 10 and 11, press the digits that comprise them in succession).
The display of the input selection menu ends

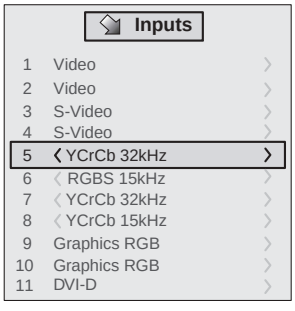


Fig. 12a

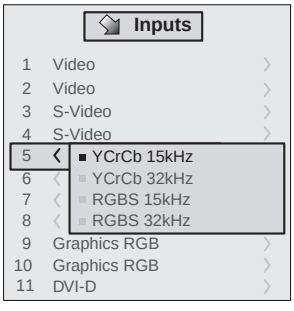


Fig. 12b

by pressing the ESC key, or when the time allowed for displaying the on-screen menu has lapsed (set in the Set-up Menu).
Inputs 5, 6, 7 and 8 can receive RGB and YCrCb signals, at 15 kHz, 32 kHz or higher. The association between the input and the type of signal is made from the pull-down menu that appears on the right of the < symbol after pressing the < key (Fig. 12b). After selecting the signal coming from the source (by means of the ↑ and ↓ keys), press MENU+/MENU - to confirm and close the pull-down menu; on the right of the < symbol the value just set will be displayed.
As with the other inputs, you can now select the input just set by pressing the key >.
During the short time it takes to find the signal, a box appears showing the signal requested. As soon as this is displayed, additional information relating to video standard (for video signals) or resolution (for graphic signals) and aspect appears in the box.

MAIN MENU

To access the main menu of the On Screen Display press the MENU key on the keypad or the MENU+ or MENU- key on the remote control.
The main menu is divided into three windows, PICTURE, IMAGE and SET-UP, in which the various adjustments are grouped according to the frequency used. With ↑ and ↓ select the line corresponding to the adjustment to be made (Fig. 13).
The various menus only offer pertinent adjustments, according to the type of input signal displayed (e.g. certain typical

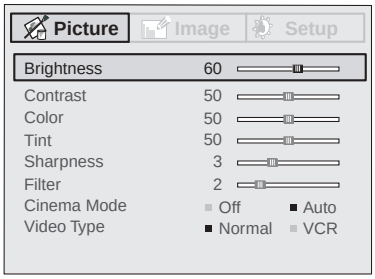


Fig. 13

adjustments for video signals, not necessary for graphic signals, do not appear on the menus, and vice versa).
Some adjustments (e.g.BRIGHTNESS and CONTRAST) are differentiated by a numerical value, which can be changed, within set limits, using the keys ← / →.
For others (e.g. VIDEO TYPE) you can choose between two options presented on the same line (and selectable using the keys ← / →).
Other adjustments (marked by the < symbol) provide submenus, which appear as a superimposed window in which the selection is made with the ↑ / ↓ (Fig. 14).
These submenus are accessed by pressing the < key, while exit

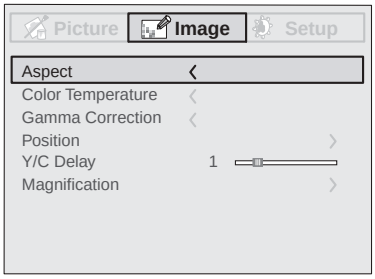


Fig. 14a

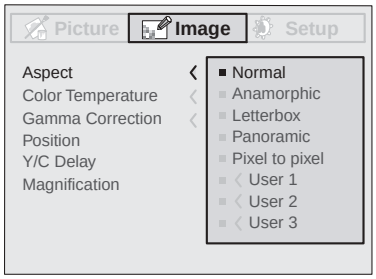


Fig. 14b

and return to the upper level occurs by pressing MENU+/-.
Press ESC on the remote control or keypad to interrupt the menu display or wait for it to disappear automatically after the number of seconds set on the SET-UP page.

PICTURE

This menu contains the adjustments that affect image quality. Adjustments that are not available for a given input do not appear on the menu. Table 4 summarises the adjustments available for each input. For a complete table of the on-screen menus, consult 'On screen menu layouts' in the section "Additional Information."

BRIGHTNESS

Adjusts the level of light associated to the black parts of the image (black level), without affecting the white parts. By increasing this value the darker parts of the image will become sharper. To make the correct adjustment the grey scale signal display can be useful, endeavouring to make the black level and the level just above it distinct. Alternatively, you can use a scene with black objects close to other dark objects.

CONTRAST

Adjusts the level of light associated with the white parts of the image (white level) without affecting the black parts.
Displaying a grey scale can help in making the correct adjustment, endeavouring to make the white level and the level just below it distinct. Alternatively, you can use a scene in which there are well-lit white objects surrounded by light objects that are illuminated less intensely.

COLOUR

This adjustment (also called Saturation) increases or decreases the colour intensity of the image. At the value of zero, a colour image will appear in black and white. Increasing the value, it will be necessary to find the point where the colours appear natural: the skin tone of a person or the green of the grass in a landscape are good references.

TINT

Adjusts the colour purity of the image. It essentially expresses the ratio between red and green in an image.
On decreasing this value, the red content of the image will increase; increasing the value, the green content will increase. The skin tone of a person or a test pattern with colour bars can be used when making this adjustment.

SHARPNESS

Increases or decreases the sharpness of the image by processing the signal.
On decreasing this value, the details of the image will appear softer, while increasing it will make them more defined, and the edges of the object become sharper.
However, too high a value could make the image appear 'noisy' and highlight the outlines of the object in a unnatural way.

SHARPNESS MODE
This allows you to select the type of processing associated with the sharpness adjustment. In the case of a progressive or interlaced video signal VIDEO mode is advisable; with PC graphic signals, it is more appropriate to use GRAPHIC.

FILTER
This allows you to select the mode with which the input signal is processed. Selecting the most appropriate value for a given signal provides the best horizontal and vertical definition of the image and makes it clearer.

CINEMA MODE
In AUTO the de-interlacer recognises if the signal is coming from a movie film (obtained from a Telecine device with 3:2 or 2:2 sequence) and applies a de-interlacing algorithm optimised for this type of signal.
If, on the other hand, the video signal is not recognised as coming from a film, or if you select NO, the de-interlacer applies a "Motion compensated" algorithm optimised for signals coming from a videocamera.

VIDEO TYPE
Inserts a filter to increase the stability of signals coming from VCRs. From the remote control, you can switch between NORMAL and VCR mode by pressing VCR.

IMAGE

Table 4

Adjustments	Inputs					
	Video S-Video	RGBS 15kHz YCrCb 15kHz	RGBS 32 kHz	YCrCb 32 kHz	Graphics RGB	DVI-D
Brightness	●	●	●	●	●	●
Contrast	●	●	●	●	●	●
Colour	●	●	-	●	-	-
Tint	o	●	-	●	-	-
Sharpness	●	●	●	●	●	●
Sharpness Mode	-	-	●	●	●	●
Filter	●	●	-	-	-	-
Cinema Mode	●	●	-	-	-	-
Video Type	●	●	-	-	-	-

o Present only if the Video Standard is NTSC

This menu contains the adjustments that affect the quality and geometric characteristics of the image.

POSITION
Adjusts the position of the image in a horizontal or vertical direction. Determines the aspect of the projected image.
Normally, it is not necessary to change these values, since the system examines the input signal and automatically sets the most suitable values.
However, if the image is not perfectly centred, you can ask the system to repeat the analysis of the input signal and the positioning of the image, recalling the automatic adjustment procedure with the AUTO key on the remote control or the keypad. At the time the procedure is recalled, the presence of a white (or light) outline in the displayed image can be of help.

ASPECT
This adjustment allows you to change the dimensions and aspect ratio (the relationship between width and height) of the displayed image. There are five predefined aspects available and three personalised ones (whose parameters can be set by the user).

It is possible to select a different aspect for each of the sources: it will be automatically recalled when the source is recalled.

You can also select from the various aspects by repeatedly pressing the ▭ key on the remote control, or by pressing ▭ and one of the numerical keys 1...8.

The following aspects are available.

NORMAL
Displays the image by occupying the entire vertical dimension of the screen and maintaining the aspect ratio of the input signal. When the input signal has an aspect ratio of 4:3, black vertical bars appear on the right and left of the image.

ANAMORPHIC
Allows a 16:9 image to be correctly displayed.

LETTERBOX
Allows a 4:3 letterbox image (with the signal coming from the source and black bands above and below the image) to be displayed, filling the 16:9 screen and maintaining the correct aspect ratio.

PANORAMIC
Enlarges a 4:3 image by slightly cutting off the upper and lower parts.
It is ideal for displaying a 4:3 image on the 16:9 display screen.

PIXEL TO PIXEL
Performs a pixel to pixel mapping of any image without making any changes to adapt it to the screen.
The image is centred in the screen and if its horizontal and/or vertical resolution is less than that of the display, vertical and/or horizontal bands will outline the edges.

USER 1, 2 AND 3
When none of the predefined aspects is satisfactory, you can use the personal aspects, which allow the horizontal and vertical dimensions of the image to be continually varied.

FREQUENCY/PHASE
These adjustments, which are available for progressive signals and signals coming from a computer, determine the correspondence between the number of pixels making up the signal and the number of pixels making up the projected image. Normally this will not be necessary, since the system examines the input signal and automatically sets the most suitable values. However, if the image appears disturbed (loss of resolution within equidistant vertical bands or instability and lack of sharpness in thin vertical lines) it may help to ask the system to repeat the analysis of the input signal and determining the best parameters by recalling the automatic adjustment procedure with AUTO on the remote control or on the keypad.
If the automatic procedure still has no effect, then manually set the frequency and phase values, getting as close a necessary to the screen in order to see the effects of the adjustments.

COLOUR TEMPERATURE
Changes the colour balance of the image.
It is possible to make these predominantly red (corresponding to low colour temperature values - expressed in degrees Kelvin) or predominantly blue (high values).
The choice can be made between three predefined values: HIGH (corresponding to approx. 9300 degrees Kelvin), MEDIUM (approx. 6500 degrees Kelvin), LOW (approx. 5000 degrees Kelvin) and one PERSONAL by the user, making separate adjustment for RED, GREEN and BLUE.

Generally, the HIGH value is more suitable for displaying graphic images, MEDIUM and LOW for video images.

We recommend that only expert users make these adjustments since there is a risk of obtaining results that could lower the quality of the projected image.

GAMMA CORRECTION
Determines the system's response to the "grey scale," placing more or less emphasis on the various tones of brightness (black, dark grey, medium, light grey, white) making up the projected image.
The GRAPHIC value is more suitable for computer images, while the FILM and VIDEO values are more suitable for video images.

Y/C DELAY
In the case of Video and S-Video signals, it may be necessary to horizontally align the colours within the borders of the various objects making up the image. For a given video standard (e.g. PAL or NTSC) the stored value does not normally require further fine-tuning, unless the source or the cable connection has changed.

MAGNIFICATION
Allows you to magnify the image (electronic zoom) and select the area to be enlarged.
The level of magnification is adjusted in Zoom mode (identified by a magnifying glass in the centre of the image) using the keys ← and →. The area of the image to be enlarged is selected in Pan mode (symbol in the centre of the image) using the arrow keys ↑↓ and ←→.
It is possible to switch from one mode to the other with the remote control by pressing 🔍.

Table 5

Adjustments	Inputs					
	Video S-Video	RGBS 15kHz YCrCb 15kHz	RGBS 32 kHz	YCrCb 32 kHz	RGB Grafico	DVI-D
Position	•	•	•	•	•	-
Aspect	•	•	•	•	•	•
Frequency	-	-	•	•	•	-
Phase	-	-	•	•	•	-
Colour Temperature	•	•	•	•	•	•
Gamma Correction	•	•	•	•	•	•
Y/C Delay	•	•	-	-	-	-
Magnification	•	•	•	•	•	•

SET-UP

This menu contains less frequently used adjustments that can be of help during installation (e.g. selecting the language for the On Screen Display or the display of Test Patterns).

LANGUAGE
Lists the languages available for the On Screen Display menus.

OSD POSITION
Allows the On Screen Display to be positioned in a particular area of the projected image. For this purpose, the arrow keys are used for fine adjustments and keys 1...9 on the remote control to select one of the 9 predefined positions.

OSD BACKGROUND
Determines the type of background for the On Screen Display.

OSD TIMEOUT
Adjusts the amount of time before the On Screen Display is automatically erased from the projected image.

TEST PATTERNS
Displays a series of test signals, useful for installing the system and verifying its basic operation. The keys ↑ and ↓ are used to select the various test patterns.

INITIAL SETTINGS
Resets the values of all adjustments (except for POSITION and Y/C DELAY) to their initial values.

INFO

Displays information relating to the projected video/graphic signal and the operational status of the system.
This function appears on pressing ⏻ on the remote control (or, in the absence of the On Screen Display, the → key on the remote control).

QUICK MENUS

The quick menus provide access to the main adjustments that effect image quality, without recalling the main menu.
The adjustments for BRIGHTNESS, CONTRAST, COLOUR, TINT, SHARPNESS and FILTER will appear one after another at the bottom of the screen, on pressing ↑ and ↓.

MESSAGES

During operation the following messages can appear:

No Signal

The system does not recognise any signal applied to the selected input. In this case:
- Make sure the selected input is connected to a video signal or graphic source and that that source is working.
- Check the integrity of the cables used to connect the system to the various sources.
- Make sure the video or graphic signals supplied by the source are compatible with the system's technical specifications and, in particular, with those of the selected input.

Out of Range

This message appears when the vertical/horizontal resolution or the frequency of the input signal exceeds the system specifications (e.g. a QXGA graphic signal) or when a signal is being sent to a given input not compatible with it (e.g. sending a progressive single to an input after having set it to YCrCb 15kHz).

MAINTENANCE AND TROUBLESHOOTING

MAINTENANCE AND CLEANING

The units making up the system do not require any internal adjustments, nor are their any parts inside them that can be replaced or adjusted by the user.
To replace the lamp, or for any other repairs, contact the nearest technical assistance centre, which will courteously and efficiently resolve any problems.
A soft cloth is normally sufficient for cleaning the DigiOptical Image Processor or Display. In the case of more stubborn dirt, you can use a slightly moistened cloth. In this case, firstly turn off and disconnect the unit, paying attention not to allow liquids to get inside.

MORE COMMON PROBLEMS

No power (LEDs always off)

- Check that the power switches of the units are in position I.
- Check that the power cables are correctly connected to the power sockets of the units.
- Check the integrity of the fuse located on the power socket on the back of the Display.
- Replace the fuse located on the power socket of the Display with one of equivalent type and characteristics (T 3.15A H).
- If the fuse blows repeatedly, contact an authorised assistance centre.

The lamp remains off

- If this occurs a short time after it was last turned it off, wait at least one minute before turning it on again, to allow the lamp to cool to its optimum turning-on temperature.
- If it occurs even when the lamp is cool, contact an authorised assistance centre.
- Check the integrity of the connection by interpreting the meaning of the system LEDs as shown in Table 3.

No Image

- Make sure the selected input is connected to a video or graphic source and that the source is working.
- Make sure the video or graphic signals supplied by the source are compatible with the technical specifications of the RTX system or, in particular, the selected input.
- Check the integrity of the cables used to connect the DigiOptical Image Processor to the various sources.
- Check the integrity of the connection between the DigiOptical Image Processor and the Display.
- Check the integrity of the connection by interpreting the meaning of the system LEDs as shown in Table 3.

Disturbed, unstable or noisy image

- Make sure the video or graphic signals provided by the source are compatible with the system's technical specifications and, in particular, the selected input.
- Check the integrity of the cables used to connect the DigiOptical Image Processor to the various sources.
- If the problem occurs on a video signal coming from a tuner, make sure the channel received is correctly tuned and that the antenna system is efficient.
- If the problem occurs in a video signal coming from a VCR, make sure the tape in the cassette is not excessively worn and try to activate VCR mode on the PICTURE menu.
- Adjust the Sharpness parameter on the PICTURE menu to optimise the projected image.

Image incomplete along the edges (vertical or horizontal)

- Make sure the video or graphic signal supplied by the source is compatible with the system's technical specifications and, in particular, with those of the selected input.
- Recall the automatic image adjustment function by pressing the AUTO located on the remote control or the keypad of the Display.
- Adjust the horizontal or vertical position of the projected image using the IMAGE/POSITION menu.
- Adjust the horizontal or vertical amplitude of the projected image with the IMAGE/ASPECT menu.

Image too dark/light or with unnatural colours

- Make sure the video or graphic signal supplied by the source is compatible with the system's technical specifications and, in particular, with those of the selected input.
- Adjust the CONTRAST, BRIGHTNESS, COLOUR and TINT parameters on the PICTURE menu.
- If necessary, adjust COLOUR TEMPERATURE and GAMMA CORRECTION (menu IMAGE).

Graphic image with confused or flickering vertical details

- Make sure the video or graphic signals supplied by the source are compatible with the system's technical specifications and, in particular, with those of the selected input.
- Perform an automatic adjustment of the image by pressing the AUTO key on the remote control or keypad of the Display.
- Adjust the FREQUENCY and PHASE parameters on the IMAGE menu to optimise the vertical details of the projected image.

Video image with colours not aligned with the vertical details

- Make sure the video or graphic signals supplied by the source are compatible with the system's technical specifications and, in particular, with those of the selected input.
- Adjust the Y/C DELAY parameter on the IMAGE menu to align the colours with the edges of the vertical details of the projected image.

Remote control not working

- Make sure the batteries that power the remote control are charged and inserted with correct polarity.
- Make sure there are no obstacles in front of the infrared

receivers located on the front panel of the DigiOptical Image Processor and the front of the Display.

- Make sure the infrared receivers located on the front panel of the DigiOptical Image Processor and at the front of the Display are not illuminated by intense light sources.

3 ADDITIONAL INFORMATION

TECHNICAL SPECIFICATIONS

DISPLAY

OPTICS

Optical system:	a single DMD™ panel, sealed against dust
DMD™ panel:	TI HD2 0.8" 12° Dark Metal - 1280x720 pixels (aspect ratio 16:9)
Projection lens:	UltraWide angle F/2.4
Colour wheel:	6 segments (RGBRGB) - 9000 rpm max
Lamp:	120 W UHP - 6,000 hours*
Image dimensions:	45": 996x560 mm (39.2x22 in) 55": 1218x685 mm (48x27 in)
Brightness:	45": 500 cd/m^2 55": 350 cd/m^2

*understood as an average value measured in the laboratory under optimal conditions; can be reduced by improper use

ELECTRONICS

Input/Output:	3-channel optical fibre link
Control:	Panel (keypad), remote control,

GENERAL

Power supply cable:	(EU, UK and US); length 2 m (6.5 ft)
Power supply:	100 to 240 VAC, tolerance +/- 10%, frequency 48 to 62 Hz
Peak current:	30 A max
Consumption:	170 W max
Fuse:	T 3,15A H, 5 x 20 mm (0.2 x 0.8 in)
Dimensions:	45": 1228 x 1108 x 373 mm (48.3 x 43.6 x 14.7 in) (LxHxD) 55": 1495 x 1218 x 421 mm (58.8 x 48 x 16.6 in) (LxHxD)
Weight (approx.):	45": 65 kg (143.3 lbs) 55": 85 kg (187.4 lbs)
Operating Temp.:	10 to 35 °C (50 to 95 °F)
Transport Temp.:	-15 to 55 °C (5 to 131 °F)
Warehouse Temp.:	-15 to 55 °C (5 to 131 °F)
Humidity:	20% to 95% non-condensing
Safety:	EN 60950, UL 60950
Transportability:	the product is considered a “table-top device”
Electromagnetic compatibility:	EN 55022 Class B EN 55024 EN 61000-3-2 EN 61000-3-3
Transport:	IEC 68-2-31, IEC 68-2-32

DIGIOPTICAL IMAGE PROCESSOR

ELECTRONICS

Input signals:

- 2 COMPOSITE VIDEO (CVBS)
  RCA-type connectors, gold-plated
  1.0 V_{pp} / 75 Ω, negative synchronism
- 2 S-VIDEO (Y/C)
  mini-DIN 4-pin connectors
  Y: 1.0 V_{pp} / 75 Ω, negative synchronism
  C: 0.286 V_{pp} / 75 Ω, [NTSC nominal burst level]
  0.3 V_{pp} / 75 Ω [PAL, SECAM nominal burst level]
- 4 COMPONENTS (Y/Cr/Cb/H/V) - RGBHV
  3 sets of 5 RCA-type connectors, gold-plated
  1 set of 5 BNC-type connectors, gold-plated
  - Signal components
    Y: 1.0 V_{pp} / 75 Ω, negative or 3-level synchronism [HDTV]
    C_r,C_b: 0.7 V_{pp} / 75 Ω
  - RGB Signal
    R,B: 0.7 V_{pp} / 75 Ω
    G: 0.7 V_{pp} / 75 Ω, separate H, V or HV synchronisms
    1.0 V_{pp} / 75 Ω, negative or 3-level synchronism [HDTV]
    H,V: positive or negative TTL, 0.3-5 V_{pp} / 1 kΩ
- 2 RGBHV (analogue RGB)
  DB15HD-type female connectors
  R,B: 0.7 V_{pp} / 75 Ω
  G: 0.7 V_{pp} / 75 Ω, separate H, V or HV synchromisms
  1.0 V_{pp} / 75 Ω, negative or 3-level synchronism [HDTV]
  H,V: positive or negative TTL, 0.3-5 V_{pp} / 1 kΩ
- 1 DVI (digital RGB)
  DVI-D female connector

Input/Output:	3-channel optical fibre link
Control:	Panel (keypad), remote control, via RS232 from PC or domestic automation devices
Horizontal frequency:	15 to 110 kHz (up to UXGA, 85 Hz)
Vertical frequency:	48 -100 Hz
Video standards:	automatic selection (PAL B,G,H,I,M,N,60, SECAM, NTSC 3.58 and 4.43)
High definition standard:	ATSC HDTV (480p, 720p, 1080i, 1080p)
Graphic standards:	VGA, SVGA, XGA, SXGA, UXGA
De-interlacer:	Faroudja chip set, DCDi™, 3:2 pull down

	sequence conversion
Colour temperature:	from 5000 to 9300 °K (three pre-set values and one customisable)
Control:	infrared ray remote control, RS232 serial (DB9 connector, female)
Outputs:	2 12-V jack connector outputs (1 active with system turned on, 1 active with 16:9 aspect ratio selected)

GENERAL

Power supply cable:	(EU, UK and US); length 2 m (6 ft 5 1/2 in)
Power supply:	100 to 240 VAC, tolerance ± 10%, frequency 48 to 62 Hz
Peak current:	30 A max
Consumption:	30W max
Dimensions:	483 x 55 x 200 mm (19 x 2.2 x 7.8 in) (LxHxD); compatible with 19" rack
Weight (approx.):	2.5 kg (5.5 lbs)
Operating Temp.:	10 to 35 °C (50 to 95 °F)
Transport Temp.:	-15 to 55 °C (5 to 131 °F)
Warehouse Temp.:	-15 to 55 °C (5 to 131 °F)
Humidity:	20% to 95% non-condensing
Safety:	EN 60950, UL 60950
Transportability:	the product is considered a “table-top device”
Electromagnetic compatibility:	EN 55022 Class B EN 55024 EN 61000-3-2 EN 61000-3-3
Transport:	IEC 68-2-31, IEC 68-2-32

CONNECTION CABLE

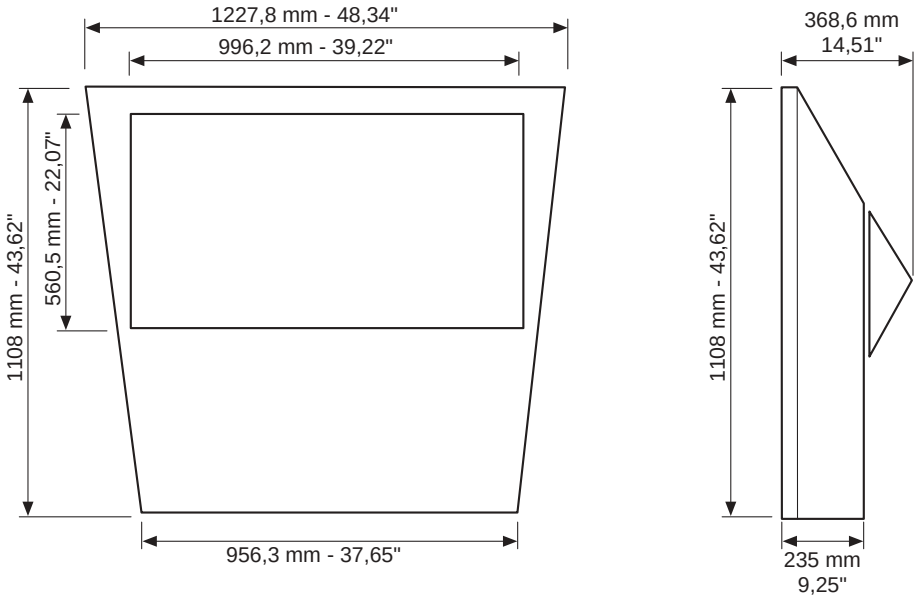
Composition:	3 50/125 optical fibres μm multimode
Connectors:	LC connector
Length:	20.0±0.2m (65.6±0.6 ft)
Diameter:	5 mm (0.2 in) max
Tensile strength:	1200N*
Type Approval:	UL OFNP

*traction only to be applied on the cable and not the fibres or connectors.

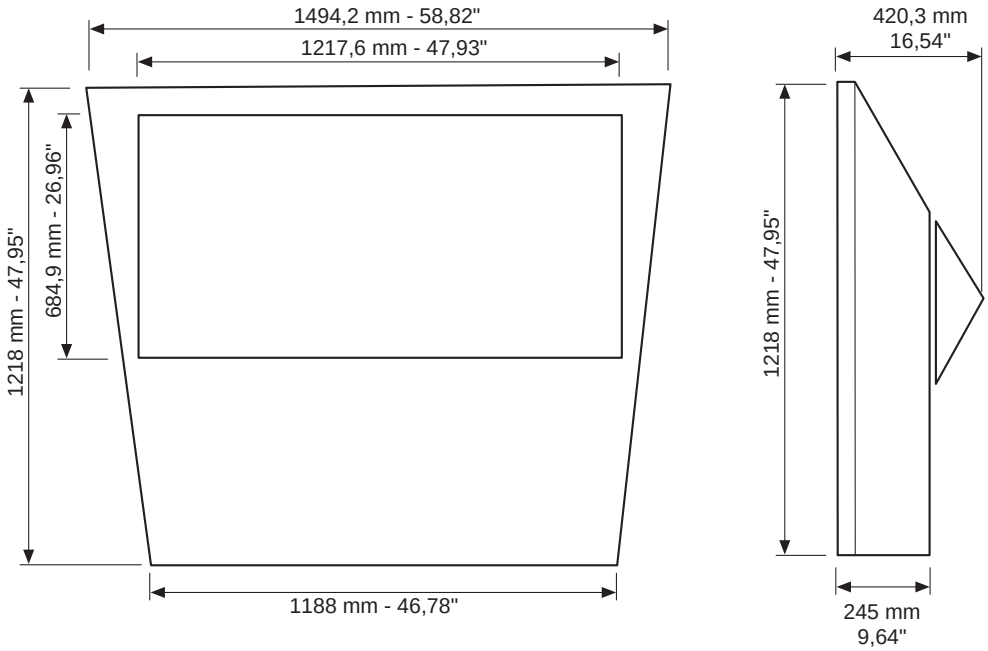
DIMENSIONS

DISPLAY

RTX 45”



RTX 55”



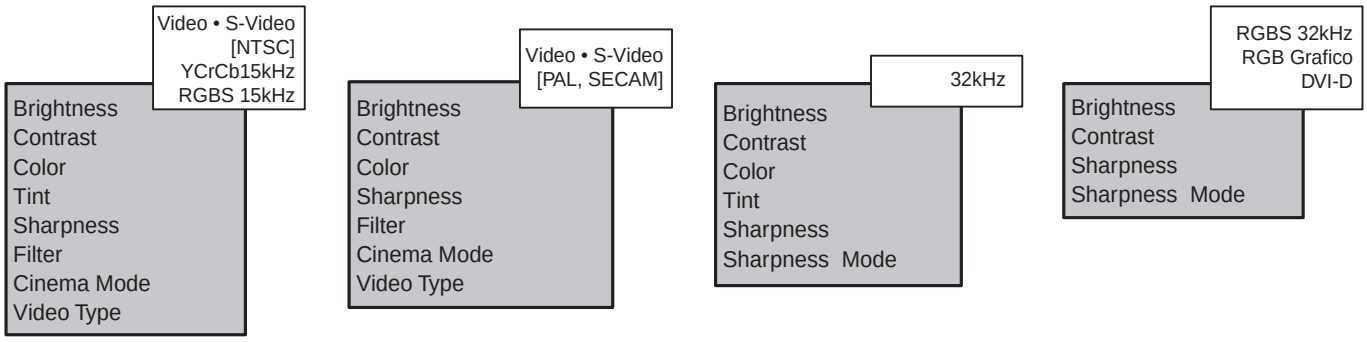
Unit of measure: mm
Scale 1:20

DIGIOPTICAL IMAGE PROCESSOR

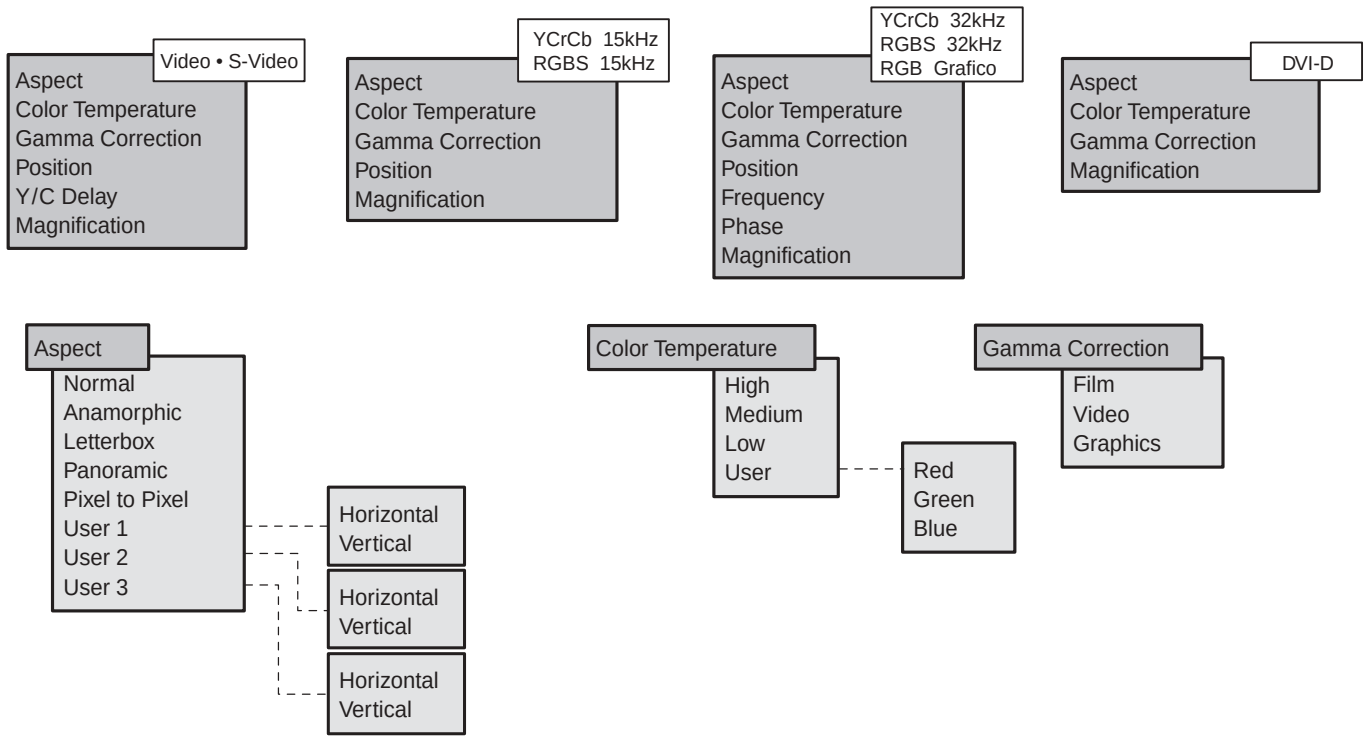
Unit of measure: mm
Scale 1:5

STRUCTURE OF THE ON SCREEN MENUS

Picture



Image



Setup